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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/816,364	03/31/2004	Edward K. Y. Jung	0104-003-005-000000	1688

80118 7590 04/02/2009
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EXAMINER	
SURVILLO, OLEG	

ART UNIT	PAPER NUMBER
2442	

MAIL DATE	DELIVERY MODE
04/02/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/816,364	JUNG ET AL.	
	Examiner	**Art Unit**	
	OLEG SURVILLO	2442	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 December 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-180* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-180* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *07/11/08, 09/17/08, 09/19/08*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Claims 1-180 remain pending in the application. Claims 1, 19, 20, 36, 37, 45-49, 67, 84, 85, 93-95, 108, 110, 112, 113, 129, 154, 179, and 180 are currently amended. No claims have been canceled. No new claims have been added.

Response to Arguments

2. With regard to applicants' remarks dated December 11, 2008:

regarding objection to an abstract as non-enabling to determine the nature and gist of the technical disclosure, applicants' amendment to provide a substitute abstract has been fully considered and is sufficient. Therefore, the objection to the abstract has been withdrawn.

Regarding the rejection of claims 108-128 and 154-180 under 35 U.S.C. 101, applicants' amendments and arguments have been fully considered and are sufficient. Therefore, the rejection has been withdrawn.

Regarding the rejection of claims 154-178 under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement, applicants' amendments and arguments have been fully considered and are sufficient. Therefore, the rejection has been withdrawn.

Regarding the rejection of claims 19, 36, 37, 45-47, 67, 84, 85, and 93-95 under 35 U.S.C. 112, second paragraph, applicants' amendment and arguments have been fully considered and are sufficient. Therefore, the rejection has been withdrawn.

Regarding the rejection of claims 179 and 180 under 35 U.S.C. 102(b) as being anticipated by Mulgund et al., applicants' arguments have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, new grounds of rejection are made in view of the newly discovered references.

As to claims 179 and 180, applicants argue that cited portions of Mulgund do not teach or suggest the recitations of clauses [b] and [c] of claims 179 and 180. This argument is persuasive because Mulgund does not, in fact, teach at least one gateway mote included within at least one of the first-administered set of motes or the second-administered set of motes, the at least one gateway mote including a multi-mote index creation agent configured to: receive a plurality of content indexes from a corresponding plurality of motes of the at least one of the first-administered set of motes or the second-administered set of motes, and aggregate the plurality of content indexes into at least one aggregated index associated with the at least one of the first-administered set of motes or the second-administered set of motes, respectively.

Regarding the rejection of independent claims 1 and 108 under 35 U.S.C. 103(a), applicants argue that cited portions of Mulgund and Bennett do not teach or suggest the recitations of clause [b] of claims 1 and 108. This argument is persuasive because Mulgund and Bennett do not, in fact, teach aggregating the plurality of first-administered content indexes of the first set of motes into an aggregated content index <u>using a gateway mote included within the first set of motes</u> (emphasis added).

Regarding the rejection of independent claims 129 and 154 under 35 U.S.C. 103(a), applicants argue that cited portions of Mulgund and Bennett do not teach or

suggest the recitations of clause [b] of claims 129 and 154. This argument is persuasive because Mulgund and Bennett do not, in fact, teach aggregating a plurality of first-administered content indexes from a first set of motes into an aggregated content index using an aggregating mote from among the first set of motes (emphasis added).

As to any arguments not specifically addressed, they are the same as those discussed above or earlier presented in the previous response, and are not persuasive for analogous reasons.

Information Disclosure Statement

3. The information disclosure statement filed September 17, 2008 fails to comply with the provisions of 37 CFR 1.98 and MPEP § 609 because some of the documents listed under section U.S. Patent Application Documents are not identified by a U.S. Patent Application Publication Number, as required by column heading. As a result, these documents have not been considered.

Specification

4. The specification is objected to under 37 CFR 1.75(d)(1) as failing to provide a clear support or antecedent basis in the description for amended claims, as discussed below with respect to the written description requirement.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 108-128 and 154-178 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

In particular, the amended independent claims 108 and 154 recite in part *"wherein at least one of the means for creating or the means for obtaining includes at least one of electrical circuitry for creating or electrical circuitry for obtaining"*. The cited page 40 of the specification provides a very generic description of "electrical circuitry" and how *"those skilled in the art will recognize that the various aspects described herein which can be implemented, individually and/or collectively, by a wide range of hardware, software, firmware, or any combination thereof can be viewed as being composed of various types of "electrical circuitry""*. Such broad statement, applicable to virtually any computer-related patent application, provided at pages 39-43 of the specification, such section describing "the state of the art" in the computer-related field, fails to reasonably convey to one of ordinary skill in the art that the inventors, at the time the application was filed, had possession of the claimed invention directed to, in part, electrical circuitry for aggregating one or more mote-addressed content logs received from different motes in a first set of motes and electrical circuitry for transmitting at least a part of the aggregate of one or more mote-addressed content logs of different motes in the first set

of motes. It is nowhere described or even mentioned in the 43-page specification that claimed “electrical circuitry” is specifically for at least one of creating or obtaining, as claimed.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1, 2-5, 8, 9, 11, 12, 14, 16, 19-21, 23, 25, 31-39, 42-46, 48, 50-53, 56, 57, 59, 60, 62, 64, 67-69, 71, 73, 79-87, 90-94, 96, 98-101, 104, 105, 108-112, 114-117, 119-122, 125, 126, 129-131, 133, 135, 137, 138, 140, 142, 144-147, 150, 151, 154-156, 158, 160, 162, 163, 165, 167, 169-172, 175, and 176 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mulgund et al. (US 2002/0161751 A1) in view of Bennett et al. (U.S. Patent No.: 5,615,367) and in further view of “The Design of an Acquisitional Query Processor For Sensor Networks” by Samuel Madden et al.

As to claim 1, Mulgund shows:

creating a plurality of first-administered content indexes for a first set of motes [building a database model by updating relational database logical design tables at each step of the discovering step, the model created comprised of an identity of each of the sensing nodes as well as any metadata about each node of the set of nodes 2 at the left side of Fig. 1] (par. [0007], [0021]);

aggregating the plurality of first-administered content indexes of the first set of motes into an aggregated content index [retrieving the information stored at the node, the information including an identity of each of the sensing nodes as well as any metadata about each node (par. [0062]) wherein information is retrieved from a knowledge base (18) at a node (par. [0026] lines 11-17) and used to form a relational database (Fig. 3 and Fig. 4)] (abstract, par. [0005], [0025]);

creating one or more second-administered content indexes for a second set of motes [building a database model by updating relational database logical design tables at each step of the discovering step, the model created comprised of an identity of each of the sensing nodes as well as any metadata about each node of the set of nodes 2 at the right side of Fig. 1] (par. [0007], [0021]);

obtaining at least a part of the one or more second-administered content indexes of the second set of motes [retrieving the information stored at the node, the information including an identity of each of the sensing nodes as well as any metadata about each node (par. [0062]) wherein information is retrieved from a knowledge base (18) at a node (par. [0026] lines 11-17) and used to form a relational database (Fig. 3 and Fig. 4)].

Mulgund also shows creating a federated index from aggregated content index and at least a part of the one or more second-administered content indexes [joint table containing metadata and identity of each sensing node] (abstract, par. [0005] and [0025], Fig. 3, Fig. 4) [Data Table List (30) that provides mapping between individual

nodes and the names of the tables used to store those nodes' sensor data] (par. [0042], Fig. 4).

Bennett also shows creating a federated index from the aggregated content index and at least a part of the one or more second-administered content indexes [creating a design document from a first and second tables, each table containing an index] (summary of the invention, Fig. 5A).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund by creating a federated index from the aggregated content index and at least a part of the one or more second-administered content indexes, as taught by Bennett, in order to federate information from first and second indexes [tables containing metadata] into a relational database (abstract, in Bennett).

Mulgund in view of Bennett does not show that the aggregated index is aggregated using (by) a gateway mote included within the first set of motes.

Madden shows:

aggregating the plurality of first-administered content indexes of the first set of motes into an aggregated content index using a gateway mote included within the first-administered set of motes [the mote at the root of the routing tree (the mote that interacts directly with the base station] (Fig. 1; section 3.1 par. 4).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Bennett by having the aggregated index being aggregated using (by) a gateway mote included within the first set of motes

in order to lower the number of message transmissions, latency, and power consumption than the server-based approach of Mulgund ("TAG: a Tiny Aggregation Service for Ad-Hoc Sensor Networks" by Samuel Madden et al., section 4 under In-Network Aggregates).

As to claim 2, Mulgund shows:

aggregating at least a part of one or more mote-addressed content indexes from a first set of motes (abstract, paragraph [0005] and [0025], Fig. 3, Fig. 4), wherein the terms "node" and "mote" are interpreted to have the same meaning of small embedded platform that has one or more sensors (paragraph [0026]) and therefore these terms are used here interchangeably.

As to claim 3, Mulgund shows:

receiving at least a part of one or more mote-addressed indexes of the first set of motes [retrieving the information stored at the node] (par. 0062]).

As to claim 4, Mulgund shows:

creating one or more multi-mote content indexes of the first set of motes (Fig. 4, par. [0042]).

As to claim 5, Mulgund shows:

obtaining a listing of motes appropriate to at least one of the one or more multi-mote content indexes (pars [0035] and [0037]).

As to claim 8, Mulgund shows:

obtaining a listing of motes appropriate to at least one of the one or more multi-mote content indexes (pars [0035] and [0037]) from one or more motes to be included in the listing (par [0061] and [0062]) wherein the second column in table 1 (CAL) shows the current links from the Node being visited.

As to claim 9, Mulgund shows:

receiving at least a part of at least one of a mote-addressed sensing index from a reporting entity at a mote of the first set of motes [visiting a node and retrieving the information stored at the node] (par [0062]) wherein information is retrieved from a knowledge base (18) at a node (par [0026] lines 11-17) and used to form a relational database (Fig. 3 and Fig. 4).

As to claim 11, Mulgund shows:

receiving at least a part of one or more multi-mote content indexes of the first set of motes [visiting a node and retrieving the information stored at the node) (paragraphs [0007], [0026] lines 11-17, and [0062]).

As to claim 12, Mulgund shows:

receiving at least a part of at least one of a mote-addressed sensing index from at least one aggregation of one or more first-administered indexes [visiting a node and retrieving the information stored at the node) (paragraphs [0007], [0026] lines 11-17, and [0062]).

As to claim 14, Mulgund shows:

receiving at least a part of at least one of a mote-addressed sensing index from a multi-mote reporting entity at a mote of the first set of motes [visiting a node and retrieving the information stored at the node] (paragraph 0062]) wherein information is retrieved from a knowledge base (18) at a node (paragraph [0026 lines 11-17) and used to form a relational database (Fig. 3 and Fig. 4).

As to claim 16, Mulgund shows:

creating an aggregate of at least a part of one or more multi-mote content indexes of the first set of motes (abstract, paragraph [0005] and [0025], Fig. 3, Fig. 4).

As to claim 19, Mulgund shows:

migrating to a mote of the first set of motes [visiting a first sensor node] (paragraph [0007] lines18-19, paragraph [0062]); and

receiving at least a part of one or more mote-addressed content indexes with the multi-mote index creation agent [interrogating a node with a network modeling agent retrieving the information stored at the node (paragraph [0044]).

Mulgund shows that each node contains some local memory or other knowledge base for recording sensor output data, which can be retrieved by interrogating the node (paragraph [0030]), which suggests that there exists some management module that collects data from sensors and stores it in the knowledge base. However, the management module per se is not explicitly shown.

Madden shows installing a multi-mote index creation agent at the mote comprising a TinyDB, which is a distributed query processor that runs on each of the nodes in a sensor network (section 1 Introduction, paragraph 4).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Bennett by installing a multi-mote index creation agent at the mote in order to select, join, project, and aggregate data from the sensors (section 1 Introduction, paragraph 4 in Madden).

As to claim 20, Mulgund shows:

receiving at least a part of one or more mote-addressed content indexes of the first set of motes [visiting a node and retrieving the information stored at the node] (paragraphs [0025] and [0062]), wherein the terms “node” and “mote” are interpreted to have the same meaning of small embedded platform that has one or more sensors (paragraph [0026]) and therefore these terms are used here interchangeably.

As to claim 21, Mulgund shows:

receiving at least a part of at least one of a mote-addressed sensing index from at least one aggregation of one or more first-administered indexes [visiting a node and retrieving the information stored at the node) (paragraphs [0007], [0026] lines 11-17, and [0062]).

As to claim 23, Mulgund shows:

receiving at least a part of at least one of a mote-addressed sensing index from a multi-mote reporting entity at a mote of the first set of motes [visiting a node and retrieving the information stored at the node] (paragraph 0062]) wherein information is retrieved from a knowledge base (18) at a node (paragraph [0026 lines 11-17) and used to form a relational database (Fig. 3 and Fig. 4).

As to claim 25, Mulgund shows:

determining at least one of a sensing function or a control function at a mote [discovering and maintaining the distributed sensor network topology (paragraph [0007]) wherein at least one of a sensing function or a control function is interpreted to be at least one of the data elements outlined in paragraphs 0021 – 0024]; and

creating one or more mote-addressed content indexes in response to said determining [building a database model by updating relational database logical design tables at each step of the discovering step (paragraph 0007)].

Mulgund also shows a sensor network modeling agent (summary of the invention) for performing the recited functions.

Additionally to Mulgund, Madden et al. shows:

determining at least one of a sensing function or a control function at a mote [sampling a sensor *s* to evaluate any predicate over the attribute *sensors.s* (section 4.2 Ordering of Sampling And Predicates)]; and

creating one or more mote-addressed content indexes in response to said determining [creating and maintaining a catalog of metadata that describes a particular mote's local attributes, events, and information about the costs of processing and delivering data (section 4.1 Metadata Management, and Table 2, and 3)].

Madden also shows that recited functions are performed by a TinyDB (section 1 Introduction, paragraph 4).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Bennett by performing the steps of determining and creating in order to select, join, project, and aggregate data from the sensors (section 1 Introduction, paragraph 4 in Madden).

As to claim 31, Mulgund in view of Bennett and in further view of Madden shows creating at least one extensible index [a sensors table, which is conceptually unbounded (section 3.1 paragraph 3) in Madden].

As to claim 32, Mulgund in view of Bennett and in further view of Madden shows creating the at least one extensible index in response to a type of content indexed

[creating a sensors table in response to light and temperature readings selected as a type of content requested from sensors (section 3.1 paragraph 3 in Madden)].

As to claim 33, Mulgund in view of Bennett and in further view of Madden shows creating at least one a mote-addressed sensing index [a sensor table of sensors' readings (section 3.1 paragraph 3 in Madden)].

As to claim 34, Mulgund in view of Bennett and in further view of Madden shows creating at least one of a mote-addressed routing/spatial index [a list of neighbors and some routing information about the connectivity of those neighbors to the rest of the network (section 2.2 Communication in Sensor Networks, paragraph 2 in Madden)].

As to claim 35, Mulgund in view of Bennett and in further view of Madden shows inserting at least one device identifier in the one or more mote-addressed content indexes [nodeid that is selected to be reported in the sensors table (section 3.1 in Madden, see the first query)].

As to claim 36, Mulgund in view of Bennett and Madden shows:

establishing an index-creating agent at a first gateway mote of the first set of motes [running a TinyDB, which is a distributed query processor that is installed on each of the motes in a sensor network] (section 1 Introduction, par. 4 in Madden);

determining a mote-network address of the mote (paragraphs [0021] and [0028] – [0031] in Mulgund); and

associating at least one of a mote-addressed sensing index, a mote-addressed control index, or a mote-addressed routing/spatial index with the mote-network address of the mote (Fig. 3 and paragraph [0037] in Mulgund).

As to claim 37, Mulgund shows:

migrating to a first gateway mote of the first set of motes [visiting a first sensor node] (paragraph [0007] lines18-19); and

querying at least one device entity with the index creation agent [interrogating a node with a network modeling agent] (paragraph [0044]).

Mulgund shows that each node contains some local memory or other knowledge base for recording sensor output data, which can be retrieved by interrogating the node (paragraph [0030]), which suggests that there exists some management module that collects data from sensors and stores it in the knowledge base, however, the management module per se is not explicitly shown.

Madden shows installing an index creation agent at the first gateway mote [a TinyDB, which is a distributed query processor that runs on each of the nodes in a sensor network] (section 1 Introduction, paragraph 4).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Bennett by installing an index

creation agent at the first gateway mote in order to select, join, project, and aggregate data from the sensors (section 1 Introduction, paragraph 4 in Madden).

As to claim 38, Mulgund shows:

determining a mote-network address of a mote of the first set of motes (paragraphs [0021] and [0028] – [0031]);

determining one or more types of control available from one or more devices of the mote (paragraphs [0021] – [0024]) wherein the following data elements are obtained by interrogating a node (paragraph [0044]); and

associating the one or more types of control available from one or more devices of the mote with the mote-network address of the mote (Fig. 3 and paragraph [0037]).

As to claim 39, Mulgund shows:

determining a mote-network address of a mote of the first set of motes (paragraphs [0021] and [0028] – [0031]);

determining one or more types of sensing available from one or more devices of the mote (paragraphs [0021] – [0024]) wherein the following data elements are obtained by interrogating a node (paragraph [0044]); and

associating the one or more types of sensing available from one or more devices of the mote with the mote-network address of the mote (Fig. 3 and paragraph [0037]).

As to claims 42-44, the claimed limitations are interpreted broadly since the meaning of the recited limitations is not understood.

As to claims 42-44, Mulgund shows associating one or more mote-appropriate routing addresses [note addresses (see table 20 of Fig. 3)] with at least one mote-addressed content index (Fig. 3 and Fig. 4, paragraphs [0037]-[0038]) wherein mote-addressed content index could be addressed directly or indirectly depending on the implementation (paragraph [0042]).

Claims 45, 46, 93, and 94 will be examined as best understood.

As to claim 45 (and claim 93 by extension), and claim 46 (and claim 94 by extension), Mulgund shows selecting from one or more predetermined protocols and publishing at least a part of an identifier of the selected predetermined protocol [selecting and identifying selected protocol such as the Internet] (abstract).

As to claim 48, Mulgund shows:

receiving at least a part of at least one of a mote-addressed sensing index from a reporting entity at a mote of the first set of motes [visiting a node and retrieving the information stored at the node] (paragraph 0062]) wherein information is retrieved from a knowledge base (18) at a node (paragraph [0026 lines 11-17) and used to form a relational database (Fig. 3 and Fig. 4).

As to claim 50, Mulgund shows:

aggregating at least a part of one or more mote-addressed content indexes from a second set of motes (abstract, paragraph [0005] and [0025], Fig. 3, Fig. 4), wherein the terms “node” and “mote” are interpreted to have the same meaning of small embedded platform that has one or more sensors (paragraph [0026]) and therefore these terms are used here interchangeably.

As to claim 51, Mulgund shows:

receiving at least a part of one or more mote-addressed indexes of the second set of motes [visiting a node and retrieving the information stored at the node] (paragraph 0062]).

As to claim 52, Mulgund shows:

creating one or more multi-mote content indexes of the second set of motes (Fig. 4, paragraph [0042]).

As to claim 53, Mulgund shows:

obtaining a listing of motes appropriate to at least one of the one or more multi-mote content indexes (paragraphs [0035] and [0037]).

As to claim 56, Mulgund shows:

obtaining a listing of motes appropriate to at least one of the one or more multi-mote content indexes (paragraphs [0035] and [0037]) from one or more motes to be included in the listing (paragraph [0061] and [0062]) wherein the second column in table 1 (CAL) shows the current links from the Node being visited.

As to claim 57, Mulgund shows:

receiving at least a part of at least one of a mote-addressed sensing index from a reporting entity at a mote of the second set of motes [visiting a node and retrieving the information stored at the node] (paragraph 0062]) wherein information is retrieved from a knowledge base (18) at a node (paragraph [0026 lines 11-17) and used to form a relational database (Fig. 3 and Fig. 4).

As to claim 59, Mulgund shows:

receiving at least a part of one or more multi-mote content indexes of the second set of motes [visiting a node and retrieving the information stored at the node) (paragraphs [0007], [0026] lines 11-17, and [0062]).

As to claim 60, Mulgund shows:

receiving at least a part of at least one of a mote-addressed sensing index from at least one aggregation of one or more second-administered indexes [visiting a node and retrieving the information stored at the node) (paragraphs [0007], [0026] lines 11-17, and [0062]).

As to claim 62, Mulgund shows:

receiving at least a part of at least one of a mote-addressed sensing index from a multi-mote reporting entity at a mote of the second set of motes [visiting a node and retrieving the information stored at the node] (paragraph 0062]) wherein information is retrieved from a knowledge base (18) at a node (paragraph [0026 lines 11-17) and used to form a relational database (Fig. 3 and Fig. 4).

As to claim 64, Mulgund shows:

creating an aggregate of at least a part of one or more multi-mote content indexes of the second set of motes (abstract, paragraph [0005] and [0025], Fig. 3, Fig. 4).

As to claim 67, Mulgund shows:

migrating to a mote of the second set of motes [visiting a first sensor node] (paragraph [0007] lines 18-19, paragraph [0062]); and

receiving at least a part of one or more mote-addressed content indexes with the multi-mote index creation agent [interrogating a node with a network modeling agent retrieving the information stored at the node (paragraph [0044]).

Mulgund shows that each node contains some local memory or other knowledge base for recording sensor output data, which can be retrieved by interrogating the node (paragraph [0030]), which suggests that there exists some management module that

collects data from sensors and stores it in the knowledge base. However, the management module per se is not explicitly shown.

Madden shows installing a multi-mote index creation agent at the mote comprising a TinyDB, which is a distributed query processor that runs on each of the nodes in a sensor network (section 1 Introduction, paragraph 4).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Bennett by installing a multi-mote index creation agent at the mote in order to select, join, project, and aggregate data from the sensors (section 1 Introduction, paragraph 4 in Madden).

As to claim 68, Mulgund shows:

receiving at least a part of one or more mote-addressed content indexes of the second set of motes [visiting a node and retrieving the information stored at the node] (paragraphs [0025] and [0062]), wherein the terms “node” and “mote” are interpreted to have the same meaning of small embedded platform that has one or more sensors (paragraph [0026]) and therefore these terms are used here interchangeably.

As to claim 69, Mulgund shows:

receiving at least a part of at least one of a mote-addressed sensing index from at least one aggregation of one or more second-administered indexes [visiting a node and retrieving the information stored at the node) (paragraphs [0007], [0026] lines 11-17, and [0062]).

As to claim 71, Mulgund shows:

receiving at least a part of at least one of a mote-addressed sensing index from a multi-mote reporting entity at a mote of the second set of motes [visiting a node and retrieving the information stored at the node] (paragraph 0062]) wherein information is retrieved from a knowledge base (18) at a node (paragraph [0026 lines 11-17) and used to form a relational database (Fig. 3 and Fig. 4).

As to claim 73, Mulgund shows:

determining at least one of a sensing function or a control function at a mote [discovering and maintaining the distributed sensor network topology (paragraph [0007]) wherein at least one of a sensing function or a control function is interpreted to be at least one of the data elements outlined in paragraphs 0021 – 0024]; and

creating one or more mote-addressed content indexes in response to said determining [building a database model by updating relational database logical design tables at each step of the discovering step (paragraph 0007)].

Mulgund also shows a sensor network modeling agent (summary of the invention) for performing the recited functions.

Additionally to Mulgund, Madden et al. shows:

determining at least one of a sensing function or a control function at a mote [sampling a sensor *s* to evaluate any predicate over the attribute *sensors.s* (section 4.2 Ordering of Sampling And Predicates)]; and

creating one or more mote-addressed content indexes in response to said determining [creating and maintaining a catalog of metadata that describes a particular mote's local attributes, events, and information about the costs of processing and delivering data (section 4.1 Metadata Management, and Table 2, and 3)].

Madden also shows that recited functions are performed by a TinyDB (section 1 Introduction, paragraph 4).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Bennett by performing the steps of determining and creating in order to select, join, project, and aggregate data from the sensors (section 1 Introduction, paragraph 4 in Madden).

As to claim 79, Mulgund in view of Bennett and in further view of Madden shows creating at least one extensible index [a sensors table, which is conceptually unbounded (section 3.1 paragraph 3) in Madden].

As to claim 80, Mulgund in view of Bennett and in further view of Madden shows creating the at least one extensible index in response to a type of content indexed [creating a sensors table in response to light and temperature readings selected as a type of content requested from sensors (section 3.1 paragraph 3 in Madden)].

As to claim 81, Mulgund in view of Bennett and in further view of Madden shows creating at least one a mote-addressed sensing index [a sensor table of sensors' readings (section 3.1 paragraph 3 in Madden)].

As to claim 82, Mulgund in view of Bennett and in further view of Madden shows creating at least one of a mote-addressed routing/spatial index [a list of neighbors and some routing information about the connectivity of those neighbors to the rest of the network (section 2.2 Communication in Sensor Networks, paragraph 2 in Madden)].

As to claim 83, Mulgund in view of Bennett and in further view of Madden shows inserting at least one device identifier in the one or more mote-addressed content indexes [nodeid that is selected to be reported in the sensors table (section 3.1 in Madden, see the first query)].

As to claim 84, Mulgund in view of Bennett and Madden shows:

establishing an index-creating agent at a second gateway mote of the second set of motes [running a TinyDB, which is a distributed query processor that is installed on each of the motes in a sensor network] (section 1 Introduction, par. 4 in Madden);

determining a mote-network address of the mote (paragraphs [0021] and [0028] – [0031] in Mulgund); and

associating at least one of a mote-addressed sensing index, a mote-addressed control index, or a mote-addressed routing/spatial index with the mote-network address of the mote (Fig. 3 and paragraph [0037] in Mulgund).

As to claim 85, Mulgund shows:

migrating to a second gateway mote of the second set of motes [visiting a first sensor node] (paragraph [0007] lines18-19); and

querying at least one device entity with the index creation agent [interrogating a node with a network modeling agent] (paragraph [0044]).

Mulgund shows that each node contains some local memory or other knowledge base for recording sensor output data, which can be retrieved by interrogating the node (paragraph [0030]), which suggests that there exists some management module that collects data from sensors and stores it in the knowledge base, however, the management module per se is not explicitly shown.

Madden shows installing an index creation agent at the second gateway mote [a TinyDB, which is a distributed query processor that runs on each of the nodes in a sensor network] (section 1 Introduction, paragraph 4).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Bennett by installing an index creation agent at the second gateway mote in order to select, join, project, and aggregate data from the sensors (section 1 Introduction, paragraph 4 in Madden).

As to claim 86, Mulgund shows:

determining a mote-network address of a mote of the second set of motes (paragraphs [0021] and [0028] – [0031]);

determining one or more types of control available from one or more devices of the mote (paragraphs [0021] – [0024]) wherein the following data elements are obtained by interrogating a node (paragraph [0044]); and

associating the one or more types of control available from one or more devices of the mote with the mote-network address of the mote (Fig. 3 and paragraph [0037]).

As to claim 87, Mulgund shows:

determining a mote-network address of a mote of the second set of motes (paragraphs [0021] and [0028] – [0031]);

determining one or more types of sensing available from one or more devices of the mote (paragraphs [0021] – [0024]) wherein the following data elements are obtained by interrogating a node (paragraph [0044]); and

associating the one or more types of sensing available from one or more devices of the mote with the mote-network address of the mote (Fig. 3 and paragraph [0037]).

As to claims 90-92, the claimed limitations are interpreted broadly since the meaning of the recited limitations is not understood.

As to claims 90-92, Mulgund shows associating one or more mote-appropriate routing addresses [note addresses (see table 20 of Fig. 3)] with at least one mote-

addressed content index (Fig. 3 and Fig. 4, paragraphs [0037]-[0038]) wherein mote-addressed content index could be addressed directly or indirectly depending on the implementation (paragraph [0042]).

As to claim 96, Mulgund shows:

receiving at least a part of at least one of a mote-addressed sensing index from a reporting entity at a mote of the second set of motes [visiting a node and retrieving the information stored at the node] (paragraph 0062]) wherein information is retrieved from a knowledge base (18) at a node (paragraph [0026 lines 11-17) and used to form a relational database (Fig. 3 and Fig. 4).

As to claim 98, Mulgund shows creating the federated index from at least a part of one or more multi-mote content indexes of the first set of motes (Fig. 4, par. [0042]).

As to claim 99, Mulgund shows creating the federated index from at least a part of at least one of a mote-addressed sensing index, a mote-addressed control index, or a mote-addressed routing/spatial index of the first set of motes [visiting a node and retrieving the information stored at the node) (paragraphs [0007], [0026] lines 11-17, and [0062]).

As to claim 100, Mulgund shows creating the federated index from at least a part of one or more multi-mote content indexes of the second set of motes (Fig. 4, par. [0042]).

As to claim 101, Mulgund shows creating the federated index from at least a part of at least one of a mote-addressed sensing index, a mote-addressed control index, or a mote-addressed routing/spatial index of the second set of motes [visiting a node and retrieving the information stored at the node) (paragraphs [0007], [0026] lines 11-17, and [0062]).

As to claims 104 and 150, Mulgund shows generating the federated index to have information pertaining to a currency of at least one entry of an administered content index [timestamp status] (Figs. 3 and 4).

As to claims 105 and 151, Mulgund shows generating the federated index to have information pertaining to an expiration of at least one entry of an administered content index [timestamp status] (Figs. 3 and 4, par. [0041]).

As to claim 108, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 1.

As to claim 109, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 2.

As to claim 110, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 3.

As to claims 111 and 116, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 25.

As to claim 112, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 9.

As to claim 114, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 50.

As to claim 115, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 51.

As to claim 117, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 57.

As to claim 119, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 98.

As to claim 120, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 99.

As to claim 121, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 100.

As to claim 122, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 101.

As to claim 125, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 104.

As to claim 126, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 105.

As to claim 129, Mulgund shows:

aggregating a plurality of first-administered content indexes of the first set of motes [the set of nodes 2 at the left side of Fig. 1] into an aggregated content index [retrieving the information stored at the node, the information including an identity of

each of the sensing nodes as well as any metadata about each node (par. [0062]) wherein information is retrieved from a knowledge base (18) at a node (par. [0026] lines 11-17) and used to form a relational database (Fig. 3 and Fig. 4)] (abstract, par. [0005], [0025]);

obtaining at least a part of a second-administered content index of a second set of motes [the set of nodes 2 at the right side of Fig. 1; retrieving the information stored at the node, the information including an identity of each of the sensing nodes as well as any metadata about each node (par. [0062]) wherein information is retrieved from a knowledge base (18) at a node (par. [0026] lines 11-17) and used to form a relational database (Fig. 3 and Fig. 4)].

Mulgund also shows creating a federated index from the aggregated content index and at least a part of the second-administered content index [joint table containing metadata and identity of each sensing node] (abstract, paragraph [0005] and [0025], Fig. 3, Fig. 4) [Data Table List (30) that provides mapping between individual nodes and the names of the tables used to store those nodes' sensor data] (par. [0042], Fig. 4).

Bennett also shows creating a federated index from the aggregated content index and at least a part of the second-administered content index [creating a design document from a first and second tables, each table containing an index] (summary of the invention, Fig. 5A).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund by creating a federated index from the aggregated content index and at least a part of the second-administered content index,

as taught by Bennett, in order to federate information from first and second indexes [tables containing metadata] into a relational database (abstract, in Bennett).

Mulgund in view of Bennett does not show that the aggregated index is aggregated using (by) an aggregating mote from among the first set of motes.

Madden shows:

aggregating a plurality of first-administered content indexes from a first set of motes into an aggregated content index using an aggregating mote from among the first set of motes [the mote at the root of the routing tree (the mote that interacts directly with the base station] (Fig. 1; section 3.1 par. 4).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Bennett by having the aggregated index being aggregated using (by) an aggregating mote from among the first set of motes in order to lower the number of message transmissions, latency, and power consumption than the server-based approach of Mulgund ("TAG: a Tiny Aggregation Service for Ad-Hoc Sensor Networks" by Samuel Madden et al., section 4 under In-Network Aggregates).

As to claim 130, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 3.

As to claim 131, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 12.

As to claim 133, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 14.

As to claim 135, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 9.

As to claim 137, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 51.

As to claim 138, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 60.

As to claim 140, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 62.

As to claim 142, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 57.

As to claim 144, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 98.

As to claim 145, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 99.

As to claim 146, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 100.

As to claim 147, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 101.

As to claim 154, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 129.

As to claim 155, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 130.

As to claim 156, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 131.

As to claim 158, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 133.

As to claim 160, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 135.

As to claim 162, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 137.

As to claim 163, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 138.

As to claim 165, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 140.

As to claim 167, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 142.

As to claim 169, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 144.

As to claim 170, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 145.

As to claim 171, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 146.

As to claim 172, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 147.

As to claim 175, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 150.

As to claim 176, Mulgund in view of Bennett and in further view of Madden shows all the elements, as discussed above with respect to claim 151.

9. Claims 6, 7, 54, and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mulgund et al. in view of Bennett et al. in view of “The Design of an Acquisitional Query Processor For Sensor Networks” by Samuel Madden et al. and in further view of Chiloyan et al. (US Patent No.: 7,165,109).

As to claims 6 and 54, Mulgund shows:

obtaining a listing of motes appropriate to at least one of the one or more multi-mote content indexes (paragraphs [0035] and [0037]) from a multi-mote registry [Nodes Table (20)].

Chiloyan also shows:

obtaining a listing of devices from a registry [having an operational system accessing device registry to check if the particular peripheral device model is included in the current device registry] (col. 1 lines 50-65).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Bennett and in further view of Madden by obtaining a list of devices from a registry in order to check if the particular device model and necessary information about the device is in the registry (col. 1 lines 58-63 in Chiloyan).

As to claims 7 and 55, Mulgund shows:

obtaining a pre-loaded listing of motes [initial model construction listing] (paragraph [0046]) appropriate to at least one of the one or more multi-mote content indexes (paragraphs [0035] and [0037]).

Chiloyan also shows:

obtaining a pre-loaded listing of devices [devices already included in the current device registry] (col. 1 lines 50-55).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Bennett and in further view of

Madden by obtaining a pre-loaded list of devices in order to check if the particular device model and necessary information about the device is already included in the registry (col. 1 lines 58-63 in Chiloyan).

10. Claims 10, 13, 15, 17, 18, 22, 24, 40, 41, 49, 58, 61, 63, 65, 66, 70, 72, 88, 89, 97, 113, 118, 132, 134, 136, 139, 141, 143, 157, 159, 161, 164, 166, and 168 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mulgund et al. in view of Bennett et al. in view of “The Design of an Acquisitional Query Processor For Sensor Networks” by Samuel Madden et al. and in further view of Kung et al. (US 2005/0021724 A1).

As to claim 10, Mulgund shows:

receiving at least a part of at least one of a mote-addressed index from a reporting entity at a mote of the first set of motes [visiting a node and retrieving the information stored at the node] (paragraph 0062]) wherein information is retrieved from a knowledge base (18) at each node (paragraph [0026 lines 11-17) and used to form a relational database (Fig. 3 and Fig. 4).

Mulgund does not show that received index is a mote-addressed routing/spatial index.

Kung shows determining one or more types of spatial information related to devices of or proximate to the mote (paragraph [0036]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Bennett and in further view of

Madden by having a mote-addressed routing/spatial index that is stored at the reporting entity at a mote [knowledge base (18)] being received [obtained] in order to determine a global position of a mote that would identify a location of the mote in space (paragraph [0010] in Kung) and relative to other nodes since each of the sensing nodes in communication with one or more other sensing nodes (paragraph [0026] lines 11-17 in Mulgund).

As to claim 13, Mulgund shows:

receiving at least a part of at least one of a mote-addressed index from at least one aggregation of one or more first-administered indexes [visiting a node and retrieving the information stored at the node] (paragraph 0062]) wherein information is retrieved from a knowledge base (18) at each node (paragraph [0026 lines 11-17) and used to form a relational database (Fig. 3 and Fig. 4).

Mulgund does not show that received index is a mote-addressed routing/spatial index.

Kung shows determining one or more types of spatial information related to devices of or proximate to the mote (paragraph [0036]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Bennett and in further view of Madden by having a mote-addressed routing/spatial index that is stored at the reporting entity at a mote [knowledge base (18)] being received [obtained] in order to determine a global position of a mote that would identify a location of the mote in space (paragraph

[0010] in Kung) and relative to other nodes since each of the sensing nodes in communication with one or more other sensing nodes (paragraph [0026] lines 11-17 in Mulgund).

As to claim 15, Mulgund shows:

receiving at least a part of at least one of a mote-addressed index from a multi-mote reporting entity at a mote of the first set of motes [visiting a node and retrieving the information stored at the node] (paragraph 0062]) wherein information is retrieved from a knowledge base (18) at each node (paragraph [0026 lines 11-17) and used to form a relational database (Fig. 3 and Fig. 4).

Mulgund does not show that received index is a mote-addressed routing/spatial index.

Kung shows determining one or more types of spatial information related to devices of or proximate to the mote (paragraph [0036]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Bennett and in further view of Madden by having a mote-addressed routing/spatial index that is stored at the reporting entity at a mote [knowledge base (18)] being received [obtained] in order to determine a global position of a mote that would identify a location of the mote in space (paragraph [0010] in Kung) and relative to other nodes since each of the sensing nodes in communication with one or more other sensing nodes (paragraph [0026] lines 11-17 in Mulgund).

As to claims 17 and 18, Mulgund shows:

aggregating at least a part of a mote-addressed index of a multi-mote content index (abstract, paragraph [0005] and [0025], Fig. 3, Fig. 4).

Mulgund does not show that a mote-addressed index is a routing/spatial index.

Madden shows a mote-addressed routing/spatial index at a mote (under 2.2 communication in sensor networks, paragraph 2).

Kung also shows determining one or more types of spatial information related to devices of or proximate to the mote (paragraph [0036]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Bennett and in further view of Madden by having a mote-addressed routing/spatial index being aggregated in order to determine a global position of a mote that would identify a location of the mote in space (paragraph [0010] in Kung) and relative to other nodes since each of the sensing nodes in communication with one or more other sensing nodes (paragraph [0026] lines 11-17 in Mulgund).

As to claim 22, Mulgund shows:

receiving at least a part of at least one of a mote-addressed index from at least one aggregation of one or more first-administered indexes [visiting a node and retrieving the information stored at the node] (paragraph 0062]) wherein information is retrieved

from a knowledge base (18) at each node (paragraph [0026 lines 11-17) and used to form a relational database (Fig. 3 and Fig. 4).

Mulgund does not show that received index is a mote-addressed routing/spatial index.

Kung shows determining one or more types of spatial information related to devices of or proximate to the mote (paragraph [0036]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Bennett and in further view of Madden by having a mote-addressed routing/spatial index that is stored at the reporting entity at a mote [knowledge base (18)] being received [obtained] in order to determine a global position of a mote that would identify a location of the mote in space (paragraph [0010] in Kung) and relative to other nodes since each of the sensing nodes in communication with one or more other sensing nodes (paragraph [0026] lines 11-17 in Mulgund).

As to claim 24, Mulgund shows:

receiving at least a part of at least one of a mote-addressed index from a multi-mote reporting entity at a mote of the first set of motes [visiting a node and retrieving the information stored at the node] (paragraph 0062]) wherein information is retrieved from a knowledge base (18) at each node (paragraph [0026 lines 11-17) and used to form a relational database (Fig. 3 and Fig. 4).

Mulgund does not show that received index is a mote-addressed routing/spatial index.

Kung shows determining one or more types of spatial information related to devices of or proximate to the mote (paragraph [0036]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Bennett and in further view of Madden by having a mote-addressed routing/spatial index that is stored at the reporting entity at a mote [knowledge base (18)] being received [obtained] in order to determine a global position of a mote that would identify a location of the mote in space (paragraph [0010] in Kung) and relative to other nodes since each of the sensing nodes in communication with one or more other sensing nodes (paragraph [0026] lines 11-17 in Mulgund).

As to claim 40, Mulgund shows:

determining a mote-network address of a mote of the first set of motes (paragraphs [0021] and [0028] – [0031]); and

associating the one or more types of information related to devices of or proximate to the mote with the mote-network address of the mote (Fig. 3 and paragraph [0037]).

Mulgund does not show determining one or more types of spatial information related to devices of or proximate to the mote.

Kung shows determining one or more types of spatial information related to devices of or proximate to the mote (paragraph [0036]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Bennett and in further view of Madden by determining one or more types of spatial information related to devices of or proximate to the mote in order to determine a global position of a mote that would identify a location of the mote in space (paragraph [0010] in Kung).

As to claim 41, Mulgund shows:

determining a mote-network address of the mote of the first set of motes (paragraphs [0021] and [0028] – [0031]); and

associating the one or more types of information of other motes proximate to the mote with the mote-network address of the mote (Fig. 3 and paragraph [0037]).

Mulgund does not show determining one or more types of absolute spatial information of other motes proximate to the mote.

Kung shows determining one or more types of absolute spatial information of other motes proximate to the mote (paragraph [0036]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Bennett and in further view of Madden by determining one or more types of absolute spatial information of other motes proximate to the mote in order to determine a global position of a mote that would identify a location of the mote in space (paragraph [0010] in Kung).

As to claim 49, Mulgund shows:

receiving at least a part of at least one of a mote-addressed index from a reporting entity at a mote of the first set of motes [visiting a node and retrieving the information stored at the node] (paragraph 0062]) wherein information is retrieved from a knowledge base (18) at each node (paragraph [0026 lines 11-17) and used to form a relational database (Fig. 3 and Fig. 4).

Mulgund does not show that received index is a mote-addressed routing/spatial index.

Kung shows determining one or more types of spatial information related to devices of or proximate to the mote (paragraph [0036]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Bennett and in further view of Madden by having a mote-addressed routing/spatial index that is stored at the reporting entity at a mote [knowledge base (18)] being received [obtained] in order to determine a global position of a mote that would identify a location of the mote in space (paragraph [0010] in Kung) and relative to other nodes since each of the sensing nodes in communication with one or more other sensing nodes (paragraph [0026] lines 11-17 in Mulgund).

As to claim 58, Mulgund shows:

receiving at least a part of at least one of a mote-addressed index from a reporting entity at a mote of the second set of motes [visiting a node and retrieving the information stored at the node] (paragraph 0062]) wherein information is retrieved from a knowledge base (18) at each node (paragraph [0026 lines 11-17) and used to form a relational database (Fig. 3 and Fig. 4).

Mulgund does not show that received index is a mote-addressed routing/spatial index.

Kung shows determining one or more types of spatial information related to devices of or proximate to the mote (paragraph [0036]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Bennett and in further view of Madden by having a mote-addressed routing/spatial index that is stored at the reporting entity at a mote [knowledge base (18)] being received [obtained] in order to determine a global position of a mote that would identify a location of the mote in space (paragraph [0010] in Kung) and relative to other nodes since each of the sensing nodes in communication with one or more other sensing nodes (paragraph [0026] lines 11-17 in Mulgund).

As to claim 61, Mulgund shows:

receiving at least a part of at least one of a mote-addressed index from at least one aggregation of one or more second-administered indexes [visiting a node and retrieving the information stored at the node] (paragraph 0062]) wherein information is

retrieved from a knowledge base (18) at each node (paragraph [0026 lines 11-17) and used to form a relational database (Fig. 3 and Fig. 4).

Mulgund does not show that received index is a mote-addressed routing/spatial index.

Kung shows determining one or more types of spatial information related to devices of or proximate to the mote (paragraph [0036]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Bennett and in further view of Madden by having a mote-addressed routing/spatial index that is stored at the reporting entity at a mote [knowledge base (18)] being received [obtained] in order to determine a global position of a mote that would identify a location of the mote in space (paragraph [0010] in Kung) and relative to other nodes since each of the sensing nodes in communication with one or more other sensing nodes (paragraph [0026] lines 11-17 in Mulgund).

As to claim 63, Mulgund shows:

receiving at least a part of at least one of a mote-addressed index from a multi-mote reporting entity at a mote of the second set of motes [visiting a node and retrieving the information stored at the node] (paragraph 0062]) wherein information is retrieved from a knowledge base (18) at each node (paragraph [0026 lines 11-17) and used to form a relational database (Fig. 3 and Fig. 4).

Mulgund does not show that received index is a mote-addressed routing/spatial index.

Kung shows determining one or more types of spatial information related to devices of or proximate to the mote (paragraph [0036]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Bennett and in further view of Madden by having a mote-addressed routing/spatial index that is stored at the reporting entity at a mote [knowledge base (18)] being received [obtained] in order to determine a global position of a mote that would identify a location of the mote in space (paragraph [0010] in Kung) and relative to other nodes since each of the sensing nodes in communication with one or more other sensing nodes (paragraph [0026] lines 11-17 in Mulgund).

As to claims 65 and 66, Mulgund shows:

aggregating at least a part of a mote-addressed index of a multi-mote content index (abstract, paragraph [0005] and [0025], Fig. 3, Fig. 4).

Mulgund does not show that a mote-addressed index is a routing/spatial index.

Madden shows a mote-addressed routing/spatial index at a mote (under 2.2 communication in sensor networks, paragraph 2).

Kung also shows determining one or more types of spatial information related to devices of or proximate to the mote (paragraph [0036]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Bennett and in further view of Madden by having a mote-addressed routing/spatial index being aggregated in order to determine a global position of a mote that would identify a location of the mote in space (paragraph [0010] in Kung) and relative to other nodes since each of the sensing nodes in communication with one or more other sensing nodes (paragraph [0026] lines 11-17 in Mulgund).

As to claim 70, Mulgund shows:

receiving at least a part of at least one of a mote-addressed index from at least one aggregation of one or more second-administered indexes [visiting a node and retrieving the information stored at the node] (paragraph 0062]) wherein information is retrieved from a knowledge base (18) at each node (paragraph [0026 lines 11-17) and used to form a relational database (Fig. 3 and Fig. 4).

Mulgund does not show that received index is a mote-addressed routing/spatial index.

Kung shows determining one or more types of spatial information related to devices of or proximate to the mote (paragraph [0036]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Bennett and in further view of Madden by having a mote-addressed routing/spatial index that is stored at the reporting entity at a mote [knowledge base (18)] being received [obtained] in order to determine a

global position of a mote that would identify a location of the mote in space (paragraph [0010] in Kung) and relative to other nodes since each of the sensing nodes in communication with one or more other sensing nodes (paragraph [0026] lines 11-17 in Mulgund).

As to claim 72, Mulgund shows:

receiving at least a part of at least one of a mote-addressed index from a multi-mote reporting entity at a mote of the second set of motes [visiting a node and retrieving the information stored at the node] (paragraph 0062]) wherein information is retrieved from a knowledge base (18) at each node (paragraph [0026 lines 11-17) and used to form a relational database (Fig. 3 and Fig. 4).

Mulgund does not show that received index is a mote-addressed routing/spatial index.

Kung shows determining one or more types of spatial information related to devices of or proximate to the mote (paragraph [0036]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Bennett and in further view of Madden by having a mote-addressed routing/spatial index that is stored at the reporting entity at a mote [knowledge base (18)] being received [obtained] in order to determine a global position of a mote that would identify a location of the mote in space (paragraph [0010] in Kung) and relative to other nodes since each of the sensing nodes in

communication with one or more other sensing nodes (paragraph [0026] lines 11-17 in Mulgund).

As to claim 88, Mulgund shows:

determining a mote-network address of a mote of the second set of motes (paragraphs [0021] and [0028] – [0031]); and

associating the one or more types of information related to devices of or proximate to the mote with the mote-network address of the mote (Fig. 3 and paragraph [0037]).

Mulgund does not show determining one or more types of spatial information related to devices of or proximate to the mote.

Kung shows determining one or more types of spatial information related to devices of or proximate to the mote (paragraph [0036]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Bennett and in further view of Madden by determining one or more types of spatial information related to devices of or proximate to the mote in order to determine a global position of a mote that would identify a location of the mote in space (paragraph [0010] in Kung).

As to claim 89, Mulgund shows:

determining a mote-network address of the mote of the second set of motes (paragraphs [0021] and [0028] – [0031]); and

associating the one or more types of information of other motes proximate to the mote with the mote-network address of the mote (Fig. 3 and paragraph [0037]).

Mulgund does not show determining one or more types of absolute spatial information of other motes proximate to the mote.

Kung shows determining one or more types of absolute spatial information of other motes proximate to the mote (paragraph [0036]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Bennett and in further view of Madden by determining one or more types of absolute spatial information of other motes proximate to the mote in order to determine a global position of a mote that would identify a location of the mote in space (paragraph [0010] in Kung).

As to claim 97, Mulgund shows:

receiving at least a part of at least one of a mote-addressed index from a reporting entity at a mote of the second set of motes [visiting a node and retrieving the information stored at the node] (paragraph 0062]) wherein information is retrieved from a knowledge base (18) at each node (paragraph [0026 lines 11-17) and used to form a relational database (Fig. 3 and Fig. 4).

Mulgund does not show that received index is a mote-addressed routing/spatial index.

Kung shows determining one or more types of spatial information related to devices of or proximate to the mote (paragraph [0036]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Bennett and in further view of Madden by having a mote-addressed routing/spatial index that is stored at the reporting entity at a mote [knowledge base (18)] being received [obtained] in order to determine a global position of a mote that would identify a location of the mote in space (paragraph [0010] in Kung) and relative to other nodes since each of the sensing nodes in communication with one or more other sensing nodes (paragraph [0026] lines 11-17 in Mulgund).

As to claim 113, Mulgund in view of Bennett, Madden, and in further view of Kung shows all the elements, as discussed above with respect to claim 10.

As to claim 118, Mulgund in view of Bennett, Madden, and in further view of Kung shows all the elements, as discussed above with respect to claim 58.

As to claim 132, Mulgund in view of Bennett, Madden, and in further view of Kung shows all the elements, as discussed above with respect to claim 13.

As to claim 134, Mulgund in view of Bennett, Madden, and in further view of Kung shows all the elements, as discussed above with respect to claim 15.

As to claim 136, Mulgund in view of Bennett, Madden, and in further view of Kung shows all the elements, as discussed above with respect to claim 10.

As to claim 139, Mulgund in view of Bennett, Madden, and in further view of Kung shows all the elements, as discussed above with respect to claim 61.

As to claim 141, Mulgund in view of Bennett, Madden, and in further view of Kung shows all the elements, as discussed above with respect to claim 63.

As to claim 143, Mulgund in view of Bennett, Madden, and in further view of Kung shows all the elements, as discussed above with respect to claim 58.

As to claim 157, Mulgund in view of Bennett, Madden, and in further view of Kung shows all the elements, as discussed above with respect to claim 132.

As to claim 159, Mulgund in view of Bennett, Madden, and in further view of Kung shows all the elements, as discussed above with respect to claim 134.

As to claim 161, Mulgund in view of Bennett, Madden, and in further view of Kung shows all the elements, as discussed above with respect to claim 136.

As to claim 164, Mulgund in view of Bennett, Madden, and in further view of Kung shows all the elements, as discussed above with respect to claim 139.

As to claim 166, Mulgund in view of Bennett, Madden, and in further view of Kung shows all the elements, as discussed above with respect to claim 141.

As to claim 168, Mulgund in view of Bennett, Madden, and in further view of Kung shows all the elements, as discussed above with respect to claim 143.

11. Claims 26 and 74 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mulgund et al. in view of Bennett et al. in view of "The Design of an Acquisitional Query Processor For Sensor Networks" by Samuel Madden et al. and in further view of Chiloyan et al. (US Patent No.: 7,165,109).

As to claims 26 and 74, Mulgund in view of Bennett and in further view of Madden shows all the elements except for accessing at least one device entity registry.

Chiloyan shows accessing at least one device entity registry comprising having an operational system accessing device registry to check if the particular peripheral device model is included in the current device registry (col. 1 lines 50-65).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Bennett and Madden by accessing at least one device entity registry in order to check if the particular device model and necessary information about the device is in the registry (col. 1 lines 58-63 in Chiloyan).

12. Claims 27-30 and 75-78 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mulgund et al. in view of Bennett et al. in view of “The Design of an Acquisitional Query Processor For Sensor Networks” by Samuel Madden et al. and in further view of Godlewski (US Patent No.: 6,421,354).

As to claims 27 and 75, Madden shows communicating with at least one device comprising a sensor to collect its reading data (section 3.1 Basic Language Features) and store it in a sensors table (lines 1-20).

Mulgund in view of Bennett and in further view of Madden does not expressly shows that communication is established with at least one device-associated entity.

Godlewski shows communicating with at least one device-associated entity comprising a sensor interface (Fig. 1 and Fig. 4) (col. 1 lines 45-55).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Bennett and Madden by communicating with at least one device-associated entity in order to receive data from a sensor in the appropriate format (col. 1 lines 45-55 in Godlewski).

As to claims 28 and 76, Mulgund in view of Bennett, Madden and in further view of Godlewski shows communicating with at least a light device entity (col. 5 lines 58-67 and col. 6 lines 1-10 in Godlewski).

As to claims 29 and 77, Mulgund in view of Bennett and in further view of Madden shows accessing at least one device identifier of a mote-addressed content index (section 3.1 Basic Language Features lines 14-16 in Madden).

As to claims 30 and 78, Mulgund in view of Bennett, Madden and in further view of Godlewski shows communicating with at least one device entity using a common application protocol (Fig. 6 col. 13 lines 7-42 in Godlewski).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Bennett and Madden by communicating with at least one device entity using a common application protocol in order to transmit data from a sensor to the communicator using sensor interface software (col. 13 lines 35-42 in Godlewski).

13. Claims 47 and 95 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mulgund et al. in view of Bennett et al. in view of “The Design of an Acquisitional Query Processor For Sensor Networks” by Samuel Madden et al. and in further view of Regli et al. (US 2005/0141706 A1).

Claims 47 and 95 will be examined as best understood.

As to claim 47 (and claim 95 by extension), Mulgund in view of Bennett and in further view of Madden shows all the elements except for encryption utilizing at least one of a private or a public key.

Regli shows encryption utilizing at least one of a private or a public key (paragraph [0056]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Bennett and in further view of Madden by encryption utilizing at least one of a private or a public key in order to support encrypted communication at the network layer between wireless devices (paragraphs [0054]-[0056] in Regli).

14. Claims 102, 103, 106, 123, 124, 127, 148, 149, 152, 173, 174, and 177 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mulgund et al. in view of Bennett et al. in view of “The Design of an Acquisitional Query Processor For Sensor Networks” by Samuel Madden et al. and in further view of Nelson (US 2004/0122849 A1).

As to claim 102, Mulgund in view of Bennett and in further view of Madden shows all the elements except for generating the federated index to have one or more entries noting one or more respective administrative domains of one or more content index entries.

Nelson shows generating the federated index [database table] to have one or more entries noting one or more respective administrative domains of one or more content index entries (abstract, Figs. 3A-3C, par. [0017]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Bennett and in further view of

Madden by generating the federated index to have one or more entries noting one or more respective administrative domains of one or more content index entries in order to limit a user access to documents in the database only to the user’s own domain (abstract in Nelson).

As to claim 103, Mulgund in view of Bennett and in further view of Madden shows all the elements except for generating the federated index to have access information to one or more content indexes for an administered content index.

Nelson shows generating the federated index [database table] to have access information [domain ID] to one or more content indexes for an administered content index (abstract, Figs. 3A-3C and 7, par. [0017]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Bennett and in further view of Madden by generating the federated index to have access information to one or more content indexes for an administered content index in order to limit a user access to documents in the database only to the user’s own domain (abstract in Nelson).

As to claim 106, Mulgund in view of Bennett and in further view of Madden shows all the elements except for generating the federated index to have metadata pertaining to an administrative domain, wherein the metadata includes an ownership indicator.

Nelson shows generating the federated index [database table] to have metadata pertaining to an administrative domain, wherein the metadata includes an ownership indicator (par. [0040], Fig. 3C).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Bennett and in further view of Madden by generating the federated index to have metadata pertaining to an administrative domain, wherein the metadata includes an ownership indicator in order to limit a user access to documents in the database only to the user’s own domain (abstract in Nelson).

As to claim 123, Mulgund in view of Bennett, Madden, and in further view of Nelson shows all the elements, as discussed above with respect to claim 102.

As to claim 124, Mulgund in view of Bennett, Madden, and in further view of Nelson shows all the elements, as discussed above with respect to claim 103.

As to claim 127, Mulgund in view of Bennett, Madden, and in further view of Nelson shows all the elements, as discussed above with respect to claim 106.

As to claim 148, Mulgund in view of Bennett, Madden, and in further view of Nelson shows all the elements, as discussed above with respect to claim 102.

As to claim 149, Mulgund in view of Bennett, Madden, and in further view of Nelson shows all the elements, as discussed above with respect to claim 103.

As to claim 152, Mulgund in view of Bennett, Madden, and in further view of Nelson shows all the elements, as discussed above with respect to claim 106.

As to claim 173, Mulgund in view of Bennett, Madden, and in further view of Nelson shows all the elements, as discussed above with respect to claim 102.

As to claim 174, Mulgund in view of Bennett, Madden, and in further view of Nelson shows all the elements, as discussed above with respect to claim 103.

As to claim 177, Mulgund in view of Bennett, Madden, and in further view of Nelson shows all the elements, as discussed above with respect to claim 106.

15. Claims 107, 128, 153, and 178 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mulgund et al. in view of Bennett in view of “The Design of an Acquisitional Query Processor For Sensor Networks” by Samuel Madden et al. (hereinafter *Madden ACQP*) and in further view of “TAG: a Tiny Aggregation Service for Ad-Hoc Sensor Networks” by Samuel Madden et al. (hereinafter *Madden TAG*).

As to claim 107, Mulgund in view of Bennett and in further view of Madden ACQP shows all the elements except for having an administrative domain-specific query string

generated for or supplied by an administrative domain to produce an updated content index for that domain.

Madden TAG shows having an administrative domain-specific query string generated for or supplied by an administrative domain to produce an updated content index for that domain (abstract, section 1.1 the TAG Approach).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Bennett and in further view of Madden ACQP by having an administrative domain-specific query string generated for or supplied by an administrative domain to produce an updated content index for that domain in order produce updated content index (Mulgund, par. [0041]).

As to claim 128, Mulgund in view of Bennett, Madden ACQP, and in further view of Madden TAG shows all the elements, as discussed above with respect to claim 107.

As to claim 153, Mulgund in view of Bennett, Madden ACQP, and in further view of Madden TAG shows all the elements, as discussed above with respect to claim 107.

As to claim 178, Mulgund in view of Bennett, Madden ACQP, and in further view of Madden TAG shows all the elements, as discussed above with respect to claim 107.

16. Claims 179 and 180 are rejected under 35 U.S.C. 103(a) as being unpatentable over “The Design of an Acquisitional Query Processor For Sensor Networks” by Samuel Madden et al. in view of Mulgund et al.

As to claim 179, Madden shows:

at least one computational system having electrical circuitry and being operably coupled with a first-administered set of motes [a powered PC (the base station)] (Fig. 1);

at least one gateway mote included within at least one of the first-administered set of motes or the second-administered set of motes [the mote at the root of the routing tree (the mote that interacts directly with the base station] (Fig. 1), the at least one gateway mote including a multi-mote index creation agent [a TinyDB, which is a distributed query processor that runs on each of the motes in a sensor network (section 1 Introduction, par. 4) configured to:

receive a plurality of content indexes from a corresponding plurality of motes of the at least one of the first-administered set of motes or the second-administered set of motes (Fig. 1; section 3.1 par. 3-4), and

aggregate the plurality of content indexes into at least one aggregated index associated with the at least one of the first-administered set of motes or the second-administered set of motes, respectively (Fig. 1; section 3.1 par. 4).

Madden further shows the computational system configured to receive the at least one aggregated index (Fig. 1).

However, Madden does not show at least one federated index creation agent resident in the computational system, said at least one federated index creation agent

configured to receive the at least one aggregated index, and to create a federated index that includes the at least one aggregated index.

Mulgund shows:

at least computational system having electrical circuitry [database server (10)] and being operably coupled with a first-administered set of motes [set of nodes 2 at the left side of Fig. 1] and a second-administered set of motes [set of nodes 2 at the right side of Fig. 1];

at least one gateway access point (6) (Fig. 1) included within at least one of the first-administered set of motes or the second-administered set of motes (Fig. 1); and

at least one federated index creation agent resident in the computational system [network modeling agent (14)] (Fig. 1), said at least one federated index creation agent configured to receive at least one index [retrieving the information stored at the node] (par. [0062]), and to create a federated index that includes the received index [Data Table List (30) that provides mapping between individual nodes and the names of the tables used to store those nodes' sensor data] (par. [0042], Fig. 4).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Madden by having at least one federated index creation agent resident in the computational system, said at least one federated index creation agent configured to receive the at least one aggregated index, and to create a federated index that includes the at least one aggregated index in order to aggregate the information at each of the nodes into an off-network repository or network model database (par. [0025] in Mulgund).

As to claim 180, Madden shows:

at least one computational system having electrical circuitry and being operably coupled with a first-administered set of motes [a powered PC (the base station)] (Fig. 1);

at least one gateway mote included within at least one of the first-administered set of motes or the second-administered set of motes [the mote at the root of the routing tree (the mote that interacts directly with the base station] (Fig. 1), the at least one gateway mote including a multi-mote index creation agent [a TinyDB, which is a distributed query processor that runs on each of the motes in a sensor network (section 1 Introduction, par. 4) configured to:

receive a plurality of content indexes from a corresponding plurality of motes of the at least one of the first-administered set of motes or the second-administered set of motes (Fig. 1; section 3.1 par. 3-4), and

aggregate the plurality of content indexes into at least one aggregated index associated with the at least one of the first-administered set of motes or the second-administered set of motes, respectively (Fig. 1; section 3.1 par. 4).

Madden further shows the computational system configured to receive the at least one aggregated index (Fig. 1).

However, Madden does not show at least one federated index resident in the computational system, said at least one federated index configured to contain the at least one aggregated index.

Mulgund shows:

at least computational system having electrical circuitry [database server (10)] and being operably coupled with a first-administered set of motes [set of nodes 2 at the left side of Fig. 1] and a second-administered set of motes [set of nodes 2 at the right side of Fig. 1];

at least one gateway access point (6) (Fig. 1) included within at least one of the first-administered set of motes or the second-administered set of motes (Fig. 1); and

at least one federated index [Data Table List (30) that provides mapping between individual nodes and the names of the tables used to store those nodes' sensor data] (par. [0042], Fig. 4) resident in the computational system, said at least one federated index configured to contain at least one received index (par. [0021] – [0024]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Madden by having at least one federated index resident in the computational system, said at least one federated index configured to contain the at least one aggregated index in order to aggregate the information at each of the nodes into an off-network repository or network model database (par. [0025] in Mulgund).

Conclusion

17. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to OLEG SURVILLO whose telephone number is (571)272-9691. The examiner can normally be reached on M-Th 8:30am - 6:00pm; F 8:30am - 5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Caldwell can be reached on 571-272-3868. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Examiner: Oleg Survillo

Phone: 571-272-9691

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